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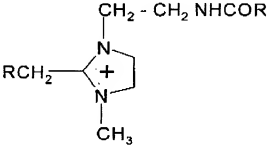
and said nonionic surfactant component is a polyethylene glycol dioleate.

[Support for this new Claim 62 is found in the application as filed on page 39, formula O:

Formula O: 38 wt% mixture of 1-(2-octadecenamidoethyl)-2-heptadecenyl-3-methylimidazolinium methylsulfate and 1-(2-octadecenamidoethyl)-2-heptadecenylimidazoline, 50 wt% PEG-600-dioleate, 7.3 wt% PEG-400-monolaurate, 3.8 wt% propylene glycol, and 0.8 wt% methyloleate.

Further support for new Claim 62, if needed, is found in the specification as filed, on pages 7-8.]

63. (New) The process according to Claim 18, wherein said quaternary ammonium surfactant component is a dialkylmethylimidazolinium compound of the formula:



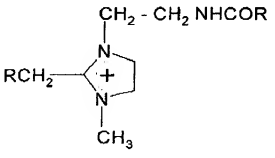
and said nonionic surfactant component is a polyethylene glycol monooleate.

[Support for this new Claim 63 is found on page 39, formula P:

Formula P: 44.5 wt% mixture of 1-(2-octadecenamidoethyl)-2-heptadecenyl-3-methylimidazolinium methylsulfate and 1-(2-octadecenamidoethyl)-2-heptadecenylimidazoline, 50 wt% PEG-400-monooleate, 4.5 wt% propylene glycol and 0.8 wt% methyloleate.

Further support, if needed, is found on pages 7-8 of the specification as filed.]

64. (New) The process according to Claim 18, wherein said quaternary ammonium surfactant component is a dialkylmethylimidazolinium compound of the formula:



and said nonionic surfactant component is a polyethylene glycol dilaurate.

[Support for this new Claim 64 is found on page 32 of the application as filed, Example Series I:

> Example Series I
>
> The procedure of Example Series H was followed except a mixture of 1-(2-octadecenamidoethyl)-2-heptadecenyl-3-methylimidazolinium methylsulfate and 1-(2-octadecenamidoethyl)-2-heptadecenylimidazoline formulated with 54 wt.% PEG-200-dilaurate was used as the debonder. This series of examples is designated as "I" on **Figure 2.**

Further support, if needed, is found on pages 7-8 of the application as filed.]

A clean copy of new Claims 62, 63 and 64 is attached as Appendix A.

REMARKS

The outstanding Office Action was issued after a *Request for Continued Examination (RCE)* was submitted with a *Declaration* which stated that the debonding characteristics of the inventive process unexpectedly correlated with the HLB value of the nonionic surfactant in the quat/nonionic surfactant mixture used as part of the process. Specifically, that *Declaration* provided, in part, as follows:

> 4. During the course of his research, he unexpectedly found that: (a) quaternary ammonium surfactants and nonionic surfactants can exhibit large synergism with respect to their debonding characteristics; (b) the synergy correlates with the hydrophile-lipophile (HLB) value of the nonionic surfactant and depends on the organic (hydrophobic) chain length present in the nonionic surfactant; and (c) the synergy is particularly useful when large tensile reductions are sought as would be the case when 100% recycle fiber is used when making a sheet.
>
> *Declaration of Dr. Bruce J. Kokko*, filed June 12, 2002, ¶4

Amended Claims 1-5, 7-10, 13-15, 17-20, 31-35 and 56-61 were rejected under 35 USC§112, first paragraph. Specifically, the Examiner noted:

> Claims 1-5, 7-10, 13-15, 17-20, 31-35, and 56-61 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The original disclosure did not disclose that the nonionic surfactant had an HLB value of greater than 10, e.g. claim 1, steps (c) and (d), nor an HLB value of less than 10, e.g. step (e); nor that the fatty acids and alcohols have "12 carbon atoms or more, e.g. claim 1, step (c) nor "16 carbon atoms or more", e.g. claim 1, steps (d) and (e).

All of the claims were also rejected under 35 USC§103 over Formulation A as prior art in view of Untied States Patent No. 4,351,699 to *Osborn, III*. The Examiner noted on page 4 of the September 10 Office Action that Applicant had not compared Example Series A with the process of the invention and that Example Series A was the closest prior art:

> Applicant has not compared the claimed process to the closest prior art, e.g., Formulation A.

Turning first to the §112, first paragraph rejection, it is believed the amendments to the claims were fully supported by the application as filed, particularly at page 38 and original Claim 18 as filed on December 7, 1999. Detailed below is a side-by-side comparison of current claim paragraphs c, d and e of the claims, the original corresponding paragraphs of Claim 18 as filed and supporting text at page 38 in the application as filed.

Comparison of Claim Paragraphs (c), (d) and (e) With Text of Application As Filed

Current Claim Paragraphs	Excerpts from Claim 18 as filed	Text from page 38 of the application as filed
wherein said nonionic surfactant component comprises a surfactant selected from the group consisting of group c, d or e and wherein group:	wherein said nonionic surfactant component comprises a surfactant selected from the group consisting of group c, d or e and wherein group:	
(c) are monoalkylated nonionic surfactants comprising alkoxylated fatty acids or alkoxylated fatty alcohols having an **HLB** value of greater than about 10 wherein said fatty acids and fatty alcohols have 12 carbon atoms or more;	(c) are monoalkylated nonionic surfactants comprising alkoxylated fatty acids or alkoxylated fatty alcohols having an **HLB** value of greater than about 10 wherein said fatty acids and fatty alcohols have 12 carbon atoms or more;	So also, the invention is practiced in another preferred aspect in connection with PEG monoester or monoether nonionic surfactants having an **HLB** value of greater than about 10 and a single alkoxylated lypophilic fatty acid or fatty alcohol component. Typical compounds in these preferred embodiments include PEG monoester or monoethers of fatty acids or fatty alcohols having chain lengths greater than about C12. Lines 17-22
(d) are dialkylated nonionic surfactants comprising alkoxylated fatty acids or alkoxylated fatty alcohols with an **HLB** value of greater than about 10 wherein said fatty acids or fatty alcohols have about 16 carbon atoms or more;	(d) are dialkylated nonionic surfactants comprising alkoxylated fatty acids or alkoxylated fatty alcohols with an **HLB** value of greater than about 10 wherein said fatty acids or fatty alcohols have about 16 carbon atoms or more;	Thus, the present invention is advantageously practiced in one preferred aspect in connection with nonionic diester or diether surfactants including alkoxylated fatty acids or fatty alcohols having a HLB value of greater than about 10 wherein the lypophilic alcohol or acid has at least about 16 carbon atoms or more. HLB values of from about 10 to 16 are typical as are lypophilic components with from about 16 to about 22 carbon atoms in these preferred embodiments. Typical nonionic surfactants advantageously utilized are PEG diesters and PEG diethers of fatty acids and fatty alcohols having carbon chain lengths greater than about C16. Lines 8-15
(e) are dialkylated nonionic surfactants comprising alkoxylated fatty alcohols or alkoxylated fatty acids having an **HLB** value of less than about 10 and wherein said fatty alcohols and fatty acids have about 16 carbon atoms or less;	(e) are dialkylated nonionic surfactants comprising alkoxylated fatty alcohols or alkoxylated fatty acids having an **HLB** value of less than about 10 and wherein said fatty alcohols and fatty acids have about 16 carbon atoms or less.	For PEG diesters the preferred HLB value depends on the carbon chain length of the fatty acid; thus, for short chains (C12) an HLB value of less than about 10 is desirable; whereas for longer chain fatty acids (C18) an HLB value greater than about 10 is preferred. One may conveniently use a C16 chain length as an approximate value to characterize this phenemenon. Lines 1-6

As can be seen from the above table, the text added to the claims matches the language in the original claims and the specification as filed and accordingly, the §112, first paragraph rejections should be withdrawn.

The enclosed *Second Declaration of Bruce J. Kokko* shows that Formulation P of the invention reduces tensile more than 60% over the formulation of Example Series A at the same lb/ton add-on rate. Dr. Kokko further explains that this is particularly surprising in the case shown in his second *Declaration* because one of skill in the art would expect more tensile reduction with more quaternary surfactant. In this respect, note United States Patent No. 5,582,681 to *Back et al.*, lines 34-39 wherein it is noted that cationic compounds are preferred for debonding (reducing tensile). The evidence submitted in this case has consistently shown unexpected and superior results over known processes for making absorbent sheet wherein tensile reduction is desired. The unexpected synergy between the ammonium and nonionic surfactants leads to significant advantages nowhere suggested in the art.

The claimed synergy requires particular HLB Values and particular levels of nonionic surfactant; 25 to 60 percent. It is submitted that the formulation of Example A does not teach those features, nor does *Osborn III*, '699 nor does any other prior art.

In view of the enclosed *Second Declaration of Bruce J. Kokko* and for the above reasons, this application is believed in condition for allowance.

Respectfully submitted,

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Reg. No. 31,158

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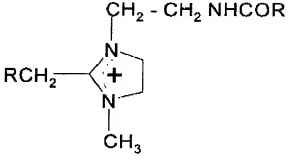
November 26, 2002

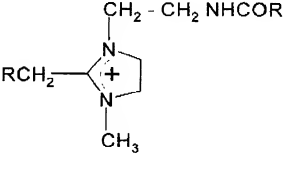
APPENDIX A
(clean copy of new Claims 62-64)

62. (New) The process according to Claim 18, wherein said quaternary ammonium surfactant component is a dialkylmethylimidazolinium compound of the formula:



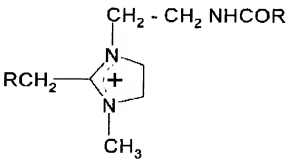
and said nonionic surfactant component is a polyethylene glycol dioleate.

63. (New) The process according to Claim 18, wherein said quaternary ammonium surfactant component is a dialkylmethylimidazolinium compound of the formula:



and said nonionic surfactant component is a polyethylene glycol monooleate.

64. (New) The process according to Claim 18, wherein said quaternary ammonium surfactant component is a dialkylmethylimidazolinium compound of the formula:



and said nonionic surfactant component is a polyethylene glycol dilaurate.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	:	
Bruce J. Kokko	:	Examiner: S. Alvo
U.S. Serial No. 09/456,270	:	Group Art Unit: 1731
Filed: December 7, 1999	:	
Docket No. 2130 (FJ-99-12)	:	
For: METHOD OF MAKING ABSORBENT SHEET FROM RECYCLE FURNISH	:	

Assistant Commissioner for Patents
Washington, D.C. 20231

SECOND DECLARATION OF BRUCE J. KOKKO

Bruce J. Kokko, inventor of the subject matter of the above-noted patent application hereby declares:

1. That he was awarded a Ph.D. degree in Chemistry from the University of Illinois, Urbana, Illinois, in 1983. Since that time he has worked on projects involving chemistry relevant to the manufacture of paper, including sheet useful for making paper towel and paper tissue.

2. That he is familiar with the above-noted application and is advised that the claims have been rejected over prior art including the debonder formulation used in Example Series A of the above-noted patent application (referred to herein as "the application"). Example Series A used a debonder composition which was commercially available at the time the application was filed. That he is further advised Example Series A has been deemed the closest prior art.

3. That he believes that the following data demonstrates clearly that the formulation of Example Series A of the application does not confer the unexpected results found within the invention.

4. That following the procedure of Example 1 of the application, absorbent sheet was prepared: (a) without debonder; (b) with the debonder of Example Series A at an add-on rate of 6 lbs per ton of fiber; and (c) with the debonder of Formula P of the application at an add-on rate of 6 lbs per ton of fiber. The quaternary and nonionic surfactant content of Example Series A and Formula P are set forth below:

> Formulation A: 75 wt.% of a mixture of 1-(2-octadecenamidoethyl)-2-heptadecenyl-3-methylimidazolinium methylsulfate , 1-(2-octadecenamidoethyl)-2-heptadecenylimidazoline and 10 wt.% PEG-6-dioleate and 10 wt.% PEG-6-2-tridecanol.
>
> Formula P: 44.5 wt% mixture of 1-(2-octadecenamidoethyl)-2-heptadecenyl-3-methylimidazolinium methylsulfate and 1-(2-octadecenamidoethyl)-2-heptadecenylimidazoline, 50 wt% PEG-400-monooleate.

Results of tensile tests on samples of the sheet prepared as noted above as well as HLB values appear in the table below:

Debonder Formulation	Dosage		aHLB[1]	Fatty Acid Carbon Chain Length of Nonionic Surfactant	Tensile Strength (km)[2]	% Reduction[3]
	Add-On Rate(#/T)	mol Quat/T				
Control	NA	NA	NA	NA	2.7	NA
Formulation of Example Series A	6	1.8	9.8	18/13	2.1	23
Formulation of Example P	6	1.4	11.8	18	1.7	37

1) Actual HLB of non-ionic surfactant(s) fraction of product.
2) Dry Breaking Length (dry tensile normalized for basis weight).
3) Percent reduction in dry breaking length relative to control.

5. The results show that at a given add-on rate in terms of lbs of debonder per ton that the invention, Formulation P, gave over 60 percent more tensile reduction at the same add-on-rate, notwithstanding the fact that less quaternary surfactant was used in connection with the Formula P sample than with the Series A sample.

6. One of skill in the art finds these results unexpected, since at these add-on levels of 1-2 moles of quat per ton, one ordinarily sees more tensile reduction as the moles of quat are increased. The fact that Formulation P, with fewer moles of quat per ton produces more tensile reduction is surprising.

7. That the nonionic surfactant used in Formula P was a PEG-400 monooleate ester (a monoalkylated nonionic surfactant) having a hydrophobic carbon chain length of 18 and an HLB value of 11.8. The debonder Formulation P is within the purview of Claim 1, subparagraph (c) by virtue of these characteristics and the presence of the nonionic surfactant in the mixture within the range of from 25 to 60 weight percent based on the total amount of surfactant. That in the Series A experiment detailed above, the nonionic surfactants used were a PEG-6-dioleate ester (a dialkylated nonionic surfactant) having a hydrophobic carbon chain length of 18 and a PEG-6-2 tridecanol (a monoalkylated nonionic surfactant) having a hydrophobic carbon chain length of 13. This nonionic surfactant mixture had an HLB value of 9.8. By virtue of these characteristics, the composition is excluded from Claim 1 of the application which calls for HLB values of greater than 10 for such compounds in the mixture (*see* Claim 1, subparagraphs a and d). The debonder formulation of Example Series A is also excluded from Claim 1 because it has less than 25 percent by weight nonionic surfactant, specifically, it had 20% by weight nonionic surfactant.

8. The undersigned Declarant declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States

Code and that such willful false statements may jeopardize the validity of the subject application or any patent issuing thereon.

Dated 11-25-02

Bruce J. Kokko

CERTIFICATE OF MAILING BY FACSIMILE (37 CFR 1.8)			Docket No.
Applicant(s): *Bruce J. Kokko*			2130 (FJ-99-12)
Serial No. 09/456,270	Filing Date December 7, 1999	Examiner S. Alvo	Group Art Unit 1731
Invention: METHOD OF MAKING ABSORBENT SHEET FROM RECYCLE FURNISH			

I hereby certify that this ***Amendment, Appendix A, Second Declaration of Bruce J. Kokko*** are being facsimiled to Examiner S. Alvo (Group 1731) at 703-872-9310 and addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231 on November 26, 2002.

Carol R. Maddaloni
(Typed or Printed Name of Person Faxing Correspondence)

Carol R Maddaloni
(Signature of Person Faxing Correspondence)

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